Translation

PCT/EP2003/014289

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 8512 WO GOT GEB-FRI	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/014289	International filing date (*day/month/year*) 16 December 2003 (16.12.2003)	Priority date (*day/month/year*) 20 December 2002 (20.12.2002)
International Patent Classification (IPC) or national classification and IPC B60K 7/00, F16D 59/02		
Applicant ZF FRIEDRICHSHAFEN AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
09 June 2004 (09.06.2004)	11 April 2005 (11.04.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/014289

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-4, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 2-7 / 1, filed with the letter of 2.11.2004 / 11.03.2005

☒ the drawings:

pages 1/1, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

I. **Basis of the report**

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

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1. The specification proposed and contained in the new claim 1, "so that forces can be transmitted in the radial direction", goes beyond the original disclosure (PCT Article 19(2)). This indication is not contained in the application, nor does the single figure unquestionably show this feature, since the lower half of the picture shows a pin which starts at the brake lining, extending through the core disk and the stator, and thus can also transmit radial forces.

The feature "so that forces can be transmitted in the radial direction" will therefore not be considered during the examination.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims	1-7	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

2. Citations and explanations

This report makes reference to the following documents, which have already been mentioned in the proceedings:

D1: DE 199 04 552 A (LINDE AG), 23 September 1999 (1999-09-23)

D2: EP-A-0 999 081 (ABM GREIFFENBERGER ANTRIEBSTEC), 10 May 2000 (2000-05-10)

D3: DE 21 33 202 A (ZAHNRADFABRIK FRIEDRICHSHAFEN), 11 January 1973 (1973-01-11)

D4: US 2002/0121823 (MOTEURS LEROY_SOMER), 5 September 2002 (2002-09-05)

1. Document D4 is considered to constitute the prior art closest to the subject matter of claim 1 and discloses (the references in parentheses are to that document):

a wheel hub drive for a running wheel (31), the drive comprising a transmission (15, 20, 24, 27), a motor (2) with a motor shaft (13) and a brake (36), a stator (18), a core disk (40) and a rotor (37), the motor (2) being arranged between the brake (36) and the transmission, the transmission being designed as a planetary gear, the rotor (37) being

secured to the motor shaft (13), and the enveloping circle of the wheel hub drive being determined by the running wheel in such a way that the radius of the enveloping circle is approximately the same as the radius of the running wheel (see paragraphs 3-5 of D4).

The subject matter of claim 1 therefore differs from the known document D4 in that

the core disk is form-fittingly connected to the stator by spheres.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

2. The present invention can therefore be considered to address the problem of achieving a compact design in the axial direction.

The solution to this problem, as proposed in claim 1 of the present application, involves an inventive step (PCT Article 33(3)) for the following reasons:

Documents D1 and D2 do not show any spheres as brake components. On the contrary, document D3 describes (see figure 2) an electromagnetic braking device for an electromotor having a stator (16), a core disk (14) and a rotor (17), the brake being provided with a silent ratchet comprising rollers or spheres (34). However, the spheres or rollers generate a clamping effect between a so-called polar ring and either the housing or the stator, rather than between the core disk and the stator. Although the core disk is also in contact with the spheres or rollers, this

produces only a partially non-positive connection in the axial direction, while the clamping effect affects the polar ring.

Since D3 fundamentally addresses another problem (keeping the air gap in the electromagnetic brake constant), it does not point a person skilled in the art in the direction of the missing feature.

3. Claims 2-7 are dependent on claim 1 and therefore likewise meet the PCT novelty and inventive step requirements.